Revista Mexicana de Ortodoncia

Vol. 5, No. 4 • October-December 2017
pp e255–e260

CASE REPORT

Treatment of irregular interdental spaces in a skeletal class II using a traditional approach: case report

Tratamiento de espacios interdentales irregulares en una clase II esquelética, mediante enfoque tradicional: presentación de un caso

Evelyn Carrera Garrido,* Gabriel Sáez Espínola§

ABSTRACT

An apparently healthy 12-year-old male patient attended the clinic with the following reason for consultation: «I want to close the spaces between my teeth». Upon clinical and radiographic examination, the patient appeared symmetric, dolichocephalic, hyperdivergent with a skeletal class II malocclusion due to maxillary protrusion. The intraoral analysis revealed an Angle molar and canine class II and irregular interdental spaces in the upper central and lower anterior region as well as a deep overbite. Orthodontic treatment consisted of phase I: leveling and alignment with NiTi 0.012", NiTi 0.014", and NiTi 0.016" upper and lower archwires; phase II: correct the deep bite through 0.016" × 0.016" SS reverse curve archwires with CII intermaxillary elastics; phase III: closed elastomeric chain for closing the central diastema and the spaces in the lower anterior segment. Finally, phase IV, which consisted of: bracket repositioning, and fixed upper and lower retention. Satisfactory results were obtained: facial, dental, aesthetic and functional.

RESUMEN

Se presenta paciente de sexo masculino de 12 años 6 meses de edad, aparentemente sano, quien a la consulta reporta «quiero que me cierren los huecos». Al análisis clínico y radiográfico aparentemente simétrico, braquicefálico, hiperdivergente, clase II esquelética por protrusión maxilar, intraoralmente presenta clase II canina y molar de Angle derecha e izquierda; presencia de espacios interdentales irregulares en el segmento central superior y anteroinferior y mordida profunda. El tratamiento ortodóntico consistió en fase I: nivelación y alineación, NiTi 0.012", 0.014" y 0.016" superior e inferior. La fase II: corregir la mordida profunda 0.016" × 0.016" SS curva inversa con elásticos intermaxilares CII. La fase III: cierre de diastema central y en segmento anteroinferior con uso de cadena cerrada. Por último, la fase IV, que consistió en: renivelación con brackets, y retención fija superior e inferior. Se lograron resultados satisfactorios: faciales, dentales, estéticos y funcionales.

Key words: Irregular interdental spaces, skeletal class II.
Palabras clave: Espacios interdentales irregulares, clase II esquelética.

INTRODUCTION

Today, cosmetic appearance of the teeth is part of a global image, interacting closely with facial esthetics. Since a nice smile is governed in large part by symmetry the specialist has an important role in resolving the closure of irregular spaces, giving the patient a solution through orthodontic treatment.

Irregular spacing of the midline are considered diastemas that vary in magnitude between the mandibular or maxillary central incisors in fully erupted teeth.[1]

Bishara (1972) described the diastema of the midline as a common form of malocclusion, identified by a space between the upper central incisors and rarely between lower central incisors.[2]

Diastemas were defined as «a space greater than 0.5 mm between the proximal surfaces of teeth».[3]

Baume (1950) helped to clarify the concept of irregular spaces in the deciduous dentition stating that they are congenital and not a product of development. After evaluating series of models of children during the eruption period of the permanent incisors, he concluded that in arches with spaced deciduous

* Graduate.
§ Teacher.

Department of Orthodontics of the Posgraduate Studies and Research Division of the Odontology Faculty, UNAM.

See related content at doi: http://dx.doi.org/10.1016/j.rmo.2018.01.018

incisors (type I), properly aligned anterior teeth would usually erupt; while in arches with deciduous incisors without spaces (type II), approximately 40% would present anterior crowding.[4]

DIAGNOSIS AND TREATMENT

Diastemas may be congenital or acquired and in their etiology they may involve several factors, such as: low insertion of the labial frenum, excessive width of the dental arch, asymmetric teeth, trauma, periodontal disease, tooth mobility, tongue habit-suction, tooth agenesis, bruxism, deep bite, mouth breathing, open bite, iatrogenic orthodontic or orthopedic treatments, and collapse of posterior bite.[5]

There are several techniques available to perform the closure of irregular spaces; using various materials among which are: closed coil springs, elastomeric chains, different types of wire and cables with different cross sections. In the stage of retention, if the casue is not eliminate it will be difficult to maintain the space closed. Thus, in young patients tongue reminders should be used for the lingual activity and in adults immediate retainers shoud be placed, with permanent use, such as a fixed retainer covering from canine to canine uniting the six anterior teeth.[6]

The objective of this case report is to present a case of irregular interdental spaces in the anterior region of the maxilla and the mandible treated traditionally.

CASE REPORT

Male patient of 12 years 6 months of age, student, attended the Orthodontics Clinic of the Division of Posgraduate Studies and Research in the Faculty of Dentistry of the UNAM. The patient presented for consultation and referred the following: «I want to close the gaps». Upon interrogation, the patient did not mention any pathologic data. Extraoral examination was performed and it was observed: a brachicefalic patient with an increase in proportion of the middle third (37%), normal capillary insertion as normal insertion of the auricles. The patient had a concave facial profile, semi-straight nose with rounded tip and presence of mentolabial fold.

Upon the initial intraoral evaluation, the presence of irregular spacing in the upper and lower anterior region was observed along with deep bite, a 3 mm overbite and a 4 mm overjet. In the lateral intraoral photographs, there was a bilateral canine and Angle molar class II. In the upper occlusal photograph we observed an ellipsoidal arch form, tooth #15 palatally displaced and tooth #23 labially positioned. In the lower arch, a parabolic arch form may be observed. Tooth #33 was in a lingual position and there were irregular interdental spaces in the lower anterior segment.

The lateral headfilm revealed a skeletal class II due to retrognathism and inclinations of the upper and lower incisors.

In the initial panoramic X-ray, 32 permanent teeth may be noted, including upper and lower third molars, and a normal crown/root ratio *(Figures 1 to 4)*.

Goals of treatment

As a facial objective, we tried to improve the profile and lip position. Functionally, to maintain temporomandibular joint health. The dental objectives were: to close the interdental spaces in the upper and lower anterior segments, improve the deep bite, achieve bilateral molar and canine class I, correct dental rotations and inclinations, maintain dental midlines aligned, decrease the overbite- and overjet and coordinate arches.

Treatment plan

Orthodontic treatment was performed with 0,022" Roth appliances. Phase I consisted in: leveling and alignment, 0.012" NiTi, 0.014" NiTi and 0.016" NiTi upper and lower archwires. Phase II consisted in: correct the deep bite 0.016" × 0.016" SS reverse curve archwire with CII intermaxillary elastics. Phase III was: closure of central diastema and spacing in the anterior segment with use of closed chain. Finally, phase IV, which consisted in: re-leveling with brackets, and upper and lower fixed retention *(Figure 5)*.

RESULTS

The extraoral clinical examination revealed that facial balance and harmonious profile, with a broad smile was achieved.

In the final intraoral evaluation, closure of the central diastema in the upper anterior segment may be observed as well as in the lower anterior segment. The anterior bite improved, with better overbite and overjet, alignment, leveling with good dental harmony and coincident midlines. Intraoral photographs in the right and left side show a bilateral molar and canine class I, paraboloid arch forms with a good intercuspation.

The final lateral headfilm revealed an adequate skeletal relationship, hyperdivergency, the interincisal angle opened, the upper and lower incisors are found within normal values.